

Daily GLOWBUGS

Digest: V1 #36

via AB4EL Web Digests @ SunSITE

Purpose: building and operating vacuum tube-based QRP rigs

[AB4EL Ham Radio Homepage @ SunSITE](#)

%%%% GlowBugs %%%%% GlowBugs %%%%% GlowBugs %%%%% GlowBugs %%%%%

Subject: glowbugs V1 #36

glowbugs

Tuesday, May 20 1997

Volume 01 : Number 036

Date: Mon, 19 May 1997 09:08:10 -0400 (EDT)

From: EWoodman@aol.com

Subject: 6146 Transmitter

Just curious.....has anyone built one of those 75W, single tube, 6146 transmitters such as Paul, N6EV, shows in his files from the '57 Handbook?

73 Eric KALYRV

Date: Mon, 19 May 1997 07:35:24 -0700 (PDT)

From: Ken Gordon <keng@uidaho.edu>

Subject: Re: 6146 Transmitter

On Mon, 19 May 1997 EWoodman@aol.com wrote:

> Just curious.....has anyone built one of those 75W, single tube, 6146
> transmitters such as Paul, N6EV, shows in his files from the '57 Handbook?

>

> 73 Eric KALYRV

I did, years ago. Worked great. I modified the output as a pi-net though. Years before that, an old ham friend, Walt Polete of Hamilton, Montana used a similar circuit with an 813 to run a single tube, crystal controlled 300 watter. It even sounded good on the air. :-)

Ken W7EKB

Date: Mon, 19 May 1997 07:57:42 -0800

From: "Kenneth G. Gordon" <keng@uidaho.edu>
Subject: HW-16 mods...

To all who asked me for the modification I have worked up to use the receiver VFO to control the transmitter frequency, although I have not yet finished mine, the following will be of interest.

The design replaces the 6CL6 oscillator with a triode-pentode. I am using the 6HF8 because it is the same tube as the HW-16's audio preamp/output. Other tube types may be used if you prefer.

The triode section is used as a transmitter "heterodyne oscillator" and the pentode is wired as the transmitter mixer.

Oscillator frequency is 5650 kHz. Since the VFO tunes "backwards", from 2150 kHz to 1900 kHz, this gives an output from the mixer at 3500 - 3750 kHz. Mixer plate tuned circuits are the old 6CL6 plate tuned circuits, thus no additional tuned circuits are necessary.

The mixer is grid block keyed as is the rest of the normal circuit.

The receiver VFO drives both the receiver mixer as before and the transmitter mixer simultaneously. This is common practice in transceivers.

A small measure of RIT is accomplished by removing the present fixed shunting caps from the rx het.osc. crystals and replacing them with a small variable.

Likewise the transmitter het osc crystal shunt cap is a small trimmer to facilitate netting rx/tx.

I am not finished tweaking the circuit values yet, but will post or snail mail the final info to those who have asked for it.

BTW, based on the fact that I can use 80 meter crystals in my HW-16 to operate on 15, I have not included a second crystal and the necessary switching for a tx het. osc. frequency of 9150 kHz for 40 meter output from the tx mixer, but I think diode switching voltages could be borrowed from other places in the HW-16's bandswitching circuitry if this were necessary.

I will keep you all posted.

Ken W7EKB

Date: Mon, 19 May 1997 08:55:13 -0700 (MST)
From: Jeff Duntemann <jeffd@coriolis.com>
Subject: The Junkbox Radio Net--More Stations Needed!

Well, last night I called CQ AM 6M on 50.4 every couple of minutes between 7 and 7:30, with no luck. Then at 7:30 I raised KA7QBX, working a Thor from outside Casa Grande, about a 75 mile line of sight path to me here in extreme north Scottsdale. We BSed for awhile and realized we were cross-polarized, and still making Q5 copy, each with 35w output. Not too shabby. That afternoon I had finally found the receiver mute pins on the

back of the 99er by pulling the chassis and tracing wires, so the 99er and the TX-62 were properly integrated for PTT, and I was looking forward to a little more action.

I listened for another half an hour after he signed, but no one else appeared. So next Sunday nite, crank up those cranky empty state boxes and let's have at it! 50.4 Mc, 7:00PM Arizona time. It's a long weekend, so put off your Arizona weed whacking until Monday and save Sunday night for the Junkbox Radio Net! Cross polarization is no impediment!

(Maybe I should run announcements like this on Friday!)

- --73--

- --Jeff Duntemann KG7JF
Scottsdale, Arizona

Date: Mon, 19 May 1997 13:04:59 -0500
From: "Robert M. Bratcher Jr." <bratcher@worldnet.att.net>
Subject: Re: 6146 Transmitter

At 02:35 PM 5/19/97 +0000, Ken Gordon wrote:

>On Mon, 19 May 1997 EWoodman@aol.com wrote:

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>> Just curious.....has anyone built one of those 75W, single tube, 6146

>> transmitters such as Paul, N6EV, shows in his files from the '57 Handbook?

>>

>> 73 Eric KA1YRV

>

>I did, years ago. Worked great. I modified the output as a pi-net

>though. Years before that, an old ham friend, Walt Polete of Hamilton,

>Montana used a similar circuit with an 813 to run a single tube, crystal

>controlled 300 watter. It even sounded good on the air. :-)

>

>Ken W7EKB

I built the QSL-60 from an old QST once. Had to use FT-243 crystals in it. My smaller ones would crack before reaching 60 watts.

Robert M. Bratcher Jr.

E-mail to:

bratcher@worldnet.att.net

Record collector, 8mm, super 8, 16 and 35mm Film collector.

Looking for prerecorded reel to reel tape albums.

I like old radio's too.

Collins, Hallicrafters, National & Hammurland are my Favorites!

Date: Mon, 19 May 1997 14:54:54 -0400 (EDT)
From: leeboo@ct.net (Leon Wiltsey)
Subject: need manual

>To: ba

>From: leeboo@ct.net (Leon Wiltsey)

>Subject: need manual
>Cc:
>Bcc:
>X-Attachments:
>
>Hi gang just got a old Dumont 304 scope
>anybody got a manual or schematic,will gladly
>oay all coats. 73 73 73
>

I SUB TO BOTH GLOWBUGS & BOATABCHORS

68 yr old semidisabled senior
(stroke got my balance & hand to eye coordination)
old old old ham but I'm back agn
now KF4RCL TECK+ (MUCH HAPPINESS)
PLAY KEYBOARD AND SING?
BUILD MOST OF MY STATION EQUIP
(tubes that is no SOLID STATE)

no trash music (anything composed after 1965)

Leon B Wiltsey (Lee)
4600 Lake Haven BLVD.
Sebring, Fl. 33872

SEBRING FL. THAT WONDERFUL PLACE WHERE THERE IS NO QRM
FROM ANYTHING LOCAL

Date: Mon, 19 May 1997 13:49:20 -0500 (CDT)
From: Dave <gekko95@ix.netcom.com>
Subject: Re: 6146 Transmitter

At 01:04 PM 5/19/97 -0500, you wrote:

>At 02:35 PM 5/19/97 +0000, Ken Gordon wrote:

>>On Mon, 19 May 1997 EWoodman@aol.com wrote:

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>>> Just curious.....has anyone built one of those 75W, single tube, 6146
>>> transmitters such as Paul, N6EV, shows in his files from the '57 Handbook?

Eric,

I built one in 1974, and cracked all 3 of my crystals! After that,
I reworked the circuit with my Elmer and we used a 6CL6 oscillator with
a tuned output and drove the 6146 from that. Ok - HE reworked
it while I helped a little!

In my opinion, you're really asking for trouble trying to make a 75 watt
oscillator stay stable and clean, and not damage crystals from excessive
current. Maybe use a 2E26 instead for the final, and cut the power down
to 25 to 50 watts maximum. Even now I only have 2 rocks that work well
in a 10 watt 6V6'er. I shudder to think what they'd do in that 1 tube
75 watt rig!

But it did run well, even before the mod. Before the crystals would crack, (Maybe someone knows better than I, but I believe FT-243 rocks can take alot more current than HC-6's. All of my rocks then were all metal cases). I could load up to a good 50 watts of clean power and it seemed pretty solid. But then, what would you expect from a Lew McCoy W1ICP design, afterall! That feller built some pretty fine rigs. BTW, I ran into his email address in a newsgroup a while back and sent him a very nice letter, but never got a reply. Maybe he hates fan mail :)

Good luck,

Dave WB7AWK

(Ok McAulay - correct my paper now :->)

* * * * *

On the Seventh Day, God rested. Day eight,
thing two, He created 6DK6's. Seeing what
He had created, He sat back and said "Yowie -
these things are worse than 35EH5's. Yuk"

* * * * *

Date: Mon, 19 May 1997 14:34:19 -0500 (CDT)
From: mjsilva@ix.netcom.com (michael silva)
Subject: Crystal current (was Re: 6146 Transmitter)

Dave wrote:

>In my opinion, you're really asking for trouble trying to make a 75
>watt oscillator stay stable and clean, and not damage crystals from
>excessive current.

I was just looking at some Handbooks over the weekend to see what they had to say about allowable crystal current, and the limit recommended for FT-243s was around 40 mA. I don't know what the recommended limits are for smaller packages. A trick I want to try Real Soon Now is to heat-shrink a small lamp and a CdS photoresistor together and calibrate the resistance reading with various (DC) currents, then put the lamp in series with a crystal so I can see what kinds of currents different circuits and tubes do run through the crystal.

73,
Mike, KK6GM

Date: Mon, 19 May 1997 15:54:22 -0400
From: "Yves A. Feder" <y.a.feder@snet.net>
Subject: Who Wanted the 11 pin male plug?

Somebody a week or two back wanted an 11 pin plug (the Collins thing)

Let me know!

73 Al W1UX

Yves Albert (Al) "Al" Feder
electric mail: y.a.feder@snet.net
Harpsichord Workshops and Recording Studios
and, dare we say it,
Home of "Tiny Radio Theater(tm)" and "Sound Cartoons(tm)"
and of the studios and transmitting facilities of W1UX Radio....

"Danged if'n I unnerstand all I know!"

<http://www.geocities.com/paris/1769>

Date: Mon, 19 May 1997 17:18:12 -0400 (EDT)

From: leeboo@ct.net (Leon Wiltsey)

Subject: tubes source

Hi gang

just left an old old tv shop guy has a wall of tubes to sell at 1994 list prices.

now I do not have a list, of the tubes available. did see some 6l6's and tv output tubes

also some higher voltage filament types and some batt op fil types.so if anybody is looking for a rerceiving type tube let me know and if he has it I will get it and send it out. He just wants toget of them.

I SUB TO BOTH GLOWBUGS & BOATABCHORS

68 yr old semidisabled senior
(stroke got my balance & hand to eye coordination)
old old old ham but I'm back agn
now KF4RCL TECK+ (MUCH HAPPINESS)
PLAY KEYBOARD AND SING?
BUILD MOST OF MY STATION EQUIP
(tubes that is no SOLID STATE)

no trash music (anything composed after 1965)

Leon B Wiltsey (Lee)
4600 Lake Haven BLVD.
Sebring, Fl. 33872

SEBRING FL. THAT WONDERFUL PLACE WHERE THERE IS NO QRM
FROM ANYTHING LOCAL

Date: Mon, 19 May 1997 16:13:43 -0500 (CDT)
From: Chris Broadbent <cfb@bga.com>
Subject: Re: Baked On Finishes

>Hello There, Glowbuggers!

>

>Does anyone know a good way to bake on an Enamel finish? I would like to add a durable coat of paint to homebrewed equipment, but nobody seems to know how to do it. Any suggestions?

>

>Thanks!

>

>Adam McLaughlin KD6POC

>QRG: 7037 KHz

>kd6poc@jps.net

><http://www.jps.net/jmclaugh>

>

I have found Rustoleum's Professional series to be a very good enamel. It takes about two days to dry (a lot longer to really 'cure'). However, the finish is excellent and durable and the stuff is available from Home Depot at a reasonable price. It does not require baking, but does work best with an undercoat (also available in the range).

Although you won't be able to tell much about the finish, have a look on my home page (<http://www.bga.com/~cfb/>) at my TX. Its body and transformer were finished using the aforementioned products. Follow the links to the views of the TX.

- --

Cheers,

ChrisF. Broadbent (KC5VQL)

Date: Mon, 19 May 1997 14:36:22 -0700
From: Bob Rolfness <rsrolfne@atnet.net>
Subject: Re: Crystal current (was Re: 6146 Transmitter)

michael silva wrote:

>

> Dave wrote:

>

> >In my opinion, you're really asking for trouble trying to make a 75
> >watt oscillator stay stable and clean, and not damage crystals from
> >excessive current.

>

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> had to say about allowable crystal current, and the limit recommended
> for FT-243s was around 40 mA. I don't know what the recommended limits
> are for smaller packages. A trick I want to try Real Soon Now is to
> heat-shrink a small lamp and a CdS photoresistor together and calibrate
> the resistance reading with various (DC) currents, then put the lamp in
> series with a crystal so I can see what kinds of currents different
> circuits and tubes do run through the crystal.

>

> 73,
> Mike, KK6GM

Greetings All -

A trick some times used in the old days was to place a "pink" bead small flash light lamp in series with the crystal. As I remember these are 1.5 volt 30 ma lamps and I idea was they would go before the crystal would.

BTW - If the lamp lights, you are getting close to having a probem.

Seened to work for me.

73's Bob W7VZX

Date: Mon, 19 May 1997 15:31:56 utc
From: wb0aaq@juno.com (FREDERICK I VAN ARTSDALEN)
Subject: Re: 6146 Transmitter

On Mon, 19 May 1997 09:08:10 -0400 (EDT) EWoodman@aol.com writes:
>Just curious.....has anyone built one of those 75W, single tube,
>6146
>transmitters such as Paul, N6EV, shows in his files from the '57
>Handbook?
>
>73 Eric KA1YRV
>

I also did back in 1963. The hams teaching the novice class had us build it before they would give us our code test and novice exam. All the

old timers scrounged parts for us and helped trouble shoot it when it didn't work right off.....some of them kinda smoked.

My first contact was with that xmtr and an ARC-5 rcvr.
Nice project.

Ike WB0AAQ

Date: Mon, 19 May 1997 15:05:13 -0700 (PDT)
From: Ken Gordon <keng@uidaho.edu>
Subject: Re: 6146 Transmitter

On Mon, 19 May 1997, Dave wrote:

> At 01:04 PM 5/19/97 -0500, you wrote:
> >At 02:35 PM 5/19/97 +0000, Ken Gordon wrote:
> >>On Mon, 19 May 1997 EWoodman@aol.com wrote:
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> Eric,
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> to 25 to 50 watts maximum. Even now I only have 2 rocks that work well
> in a 10 watt 6V6'er. I shudder to think what they'd do in that 1 tube
> 75 watt rig!

I think the secret, in addition to using heavier crystals like the FT-243, is to be very careful of the screen voltage and current. Since the circuit SHOULD be an electron coupled oscillator wherein the screen is actually the "plate" of the oscillator, this should work fine. If your circuit is an ECO, then tubes such as the 6V6 will NOT work properly since the suppressor grid is connected internally to the cathode, thus bypassing the screen grid. Bill Orr mentions this problem in at least one of his handbooks. Perhaps this is both how Walt Polete got an 813 oscillator to work without fracturing crystals (at least he never mentioned it to me or my Elmer, W7CJB Woody Davey), and why your 6V6 oscillator doesn't work properly with most crystals. You might try changing from a 6V6 to a 6AG7 to see what the difference would do for you. I think you would be pleasantly surprised. I know that there were many circuits published which used the 6V6 or 6L6, and the 6V6 is used in the BC-610, but it really isn't quite right, in my humble opinion.

>
> But it did run well, even before the mod. Before the crystals would crack,
> (Maybe someone knows better than I, but I believe FT-243 rocks can take
> alot more current than HC-6's.

This is definitely true, and there were some older crystal types which would handle much more current than the FT-243.

> All of my rocks then were all metal cases).

I always considered those too light for anything but receivers and heterodyne oscillators. I do use one (3503) in my GRC-109, but sometimes it refuses to start.

Ken W7EKB

Date: Mon, 19 May 1997 15:13:31 -0800
From: "Kenneth G. Gordon" <keng@uidaho.edu>
Subject: Isolations transformers...

I have three isolations transformers:

115 volts 13 amps.

Name plate says that one winding is good for 165 working volts, and the other good for 535 working volts.

They are heavy!!! Anyone want 'em? Make me an offer. Oh, BTW, you ship! :-)

Ken W7EKB

Date: Mon, 19 May 1997 18:06:21 -0500 (CDT)
From: Chris Broadbent <cfb@bga.com>
Subject: Yet another GRC-109

I received my GRC-109 RX/TX/big power supply on Friday. I wonder if I was the one to get the last set from Fair?

The set appears to be in good shape. The only noticable damage is from what I believe was battery acid. There is a little green corrosion on the clip that holds the TX power plug when stowed. It appears to have reached the knurled knob of the antenna tuner, there is a very small area of erosion on it. Aside from the scuff marks of life, that was about it.

I used the set this weekend. It seems to work just fine. One funny problem is I have no FT243 xtals, so I had to balance an HC6U package in the TX's FT243 socket. This works OK until the tapping on the built in Morse Key causes the xtal to fall!

The key itself, while being functional, does not appear to be as consistent in nature as my normal key. It seems like it occasionally oxidizes or does not contact as well as it might. Holding it just so seems to lessen the effect. Regardless, it's a very minor problem. Does anyone else experience this?

All in all, I am quite happy with my purchase. Now all I need is the few pages that are missing from the manual I ordered (I know they don't copy everything, but even taking that into account, I have a few missing pages). Fair said they will send me the missing pages. Watch this space.

BTW, was 80M as dead for you all as it was for me yesterday (Sunday)? I'm in central TX. Little else but noise here.

- - -

Cheers,

Chris F. Broadbent (KC5VQL)

Date: Mon, 19 May 1997 23:42:18 GMT
From: wrt@eskimo.com (Bill Turner)
Subject: Re: Baked On Finishes

On Sun, 18 May 1997 20:07:32 -0400, "Greg Parsons A.K.A. Rat"
<gregp@MIS.Net> wrote:

>Hello gang,

> You could do like I have for some small stuff, spray epoxy, it comes in=

a
>can and you can find it at hobby shops that deal with RC planes, Red =
Baron
>brand seems to work best for me. One problem, 48 hour drying time, and =
they
>do mean 48 hours!
>

- -----
Drying time can be greatly speeded up by baking it in your oven. Try
a scrap piece at about 150 degrees or so. If it comes out ok, try it
again about 10 degrees higher and keep increasing the temperature
until you find out how high you can go without damaging the finish.
I'll bet you can get the time down to a couple of hours.

An electric oven is best because the heat is dry. Gas ovens give off
water vapor as a combustion product.

73, Bill W7TI

Date: Mon, 19 May 1997 17:20:00 -0700
From: "Bowman, Jim" <Jim_Bowman@ATK.COM>
Subject: CK636 pencil toob

Anybody got anything on a type CK636 pencil toob? Has 8 leads, these are
raytheon. Got about a dozen in a toob buy.

Glowing pencils!!??

Thanx,
Jim W7HPK
Jim_Bowman@ATK.COM

Date: Mon, 19 May 1997 19:36:43 -0500 (CDT)
From: Bob Roehrig <broehrig@admin.aurora.edu>
Subject: Re: Yet another GRC-109

On Mon, 19 May 1997, Chris Broadbent wrote:

> I used the set this weekend. It seems to work just fine. One funny problem
> is I have no FT243 xtals, so I had to balance an HC6U package in the TX' s
> FT243 socket. This works OK until the tapping on the built in Morse Key
> causes the xtal to fall!

To use a HC-6 xtal in a FT-243 socket, break a couple of pins off a dead
octal tube and slip them over the xtal pins. Use needlenose pliers and
wiggle the pins off, leaving the wire inside the pin to act as a wedge.

E-mail broehrig@admin.aurora.edu 73 de Bob, K9EUI
CIS: Data / Telecom Aurora University, Aurora, IL
630-844-4898 Fax 630-844-5530

Date: Mon, 19 May 1997 19:56:50 -0500 (CDT)
From: Bob Roehrig <broehrig@admin.aurora.edu>
Subject: FMT test night approaches

Hey folks, just a reminder that the 1st BA FMT (frequency measuring test) is just a couple of days away. It happens this Wednesday night (Central time), which is 0000Z Thursday May 22.

Get those BC-221's and other BA gear warmed up and join the fun.

Thanks to whoever forwarded the info to the the ARRL letter. Nice to see us get a bit more publicity on this.

The local frequency standard is now running 1 part in 10^{-11} so the counter used to measure the transmitter will be much more accurate than anyone out there can measure with BA equipment.

E-mail broehrig@admin.aurora.edu 73 de Bob, K9EUI
CIS: Data / Telecom Aurora University, Aurora, IL
630-844-4898 Fax 630-844-5530

Date: Tue, 20 May 1997 08:22:27 -0400 (EDT)
From: EWoodman@aol.com
Subject: Re:6146 Transmitter

>I think the secret, in addition to using heavier crystals like the FT-243,
>is to be very careful of the screen voltage and current. Since the
>circuit SHOULD be an electron coupled oscillator wherein the screen is
>actually the "plate" of the oscillator, this should work fine. If your
>circuit is an ECO, then tubes such as the 6V6 will NOT work properly since
>the suppressor grid is connected internally to the cathode, thus bypassing
>the screen grid.

OK, now that's got me wondering.....I always forget about that foolish suppressor grid. I had thought about trying out that "Barracks Bag VFO" which Bob, NA4G, has put out in the archives. That's an ECO and uses a 6L6, 6F6, 807, etc. It obviously works with those but I guess you're saying it would be better to stick in something like a 6AG7 to really optimize it. I assume that the suppressor grid is affecting the efficiency of the oscillator and also affecting how well the signal gets coupled to the plate. Seems like I need to dig up some "real" tetrodes or pentodes without the internal connection.

Eric KA1YRV

PS: This is why this list is so great. All I have to do is ask a question and then sit back and read! Books are great but you can't beat this for all the practical insight.

Date: Tue, 20 May 1997 07:34:38 -0500
From: Conard Murray <ws4s@InfoAve.Net>
Subject: 810 info needed

Hello all,
Does anyone have any design curves for the 810? I just obtained a
transmitter (T-4/FRC) that uses a pair in PP for the PA.
Thanks!
de Conard WS4S
Z~U~T

Conard Murray WS4S Glowbugs Listowner
217 Dyer Avenue QRP-L #998
Cookeville, TN 38501 Arizona scQRPion
615-526-4093
Friend to all things GRC-19 and TCS
<>< Wise men still seek Him ><>

Date: Tue, 20 May 1997 08:51:28 -0500 (CDT)
From: mjsilva@ix.netcom.com (michael silva)
Subject: Re: 6146 Transmitter

>... If your circuit is an ECO, then tubes such as the 6V6 will NOT
>work properly since the suppressor grid is connected internally to the
>cathode, thus bypassing the screen grid. Bill Orr mentions this
>problem in at least one of his handbooks.

I know Ken mentioned this at least once before and I meant to follow up
on it. You wouldn't happen to know where in Orr's Handbooks he talks
about this would you -- I looked in a few and couldn't find anything.
Some of the ARRL Handbooks do suggest grounding the suppressor without
giving much reason. It occurred to me while thinking about some
familiar beam-power tubes (such as those commonly used in oscillators)
that none of them bring out the beam plates separately except the 5763,
while all the recommended true pentodes (6AC7, 6AG7, 6SK7) bring the
suppressor out -- I had never thought about that difference before.
BTW, one of the ARRL-Handbook-recommended oscillator tubes, the 6AH6
(which is just a 6AC7 stuffed into a mini envelope), is included in the
current AES sale for only 50 cents, so I guess there's no excuse to be
using those expensive 6V6s and 6L6s after all.

73,
Mike, KK6GM

End of glowbugs V1 #36

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[AB4EL Ham Radio Homepage @ SunSITE](#)

Created by **Steve Modena, AB4EL**
Comments and suggestions to **modena@SunSITE.unc.edu**
